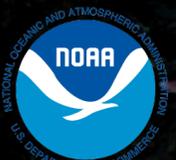


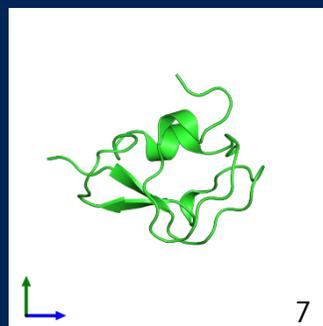
1.7 MPAs in the Ross Sea and Antarctic Peninsula regions



NOAA FISHERIES

Southwest Fisheries Science Center
Antarctic Ecosystem Research Division

FOR QUESTIONS: 5, 6



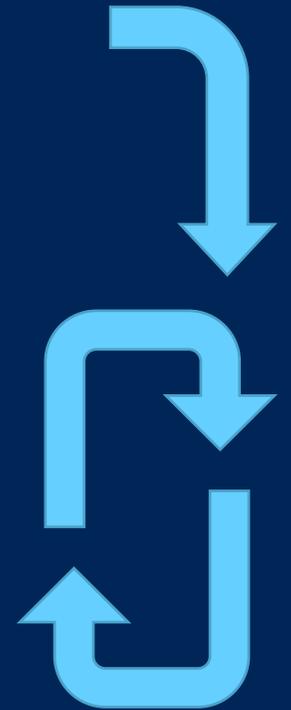
?



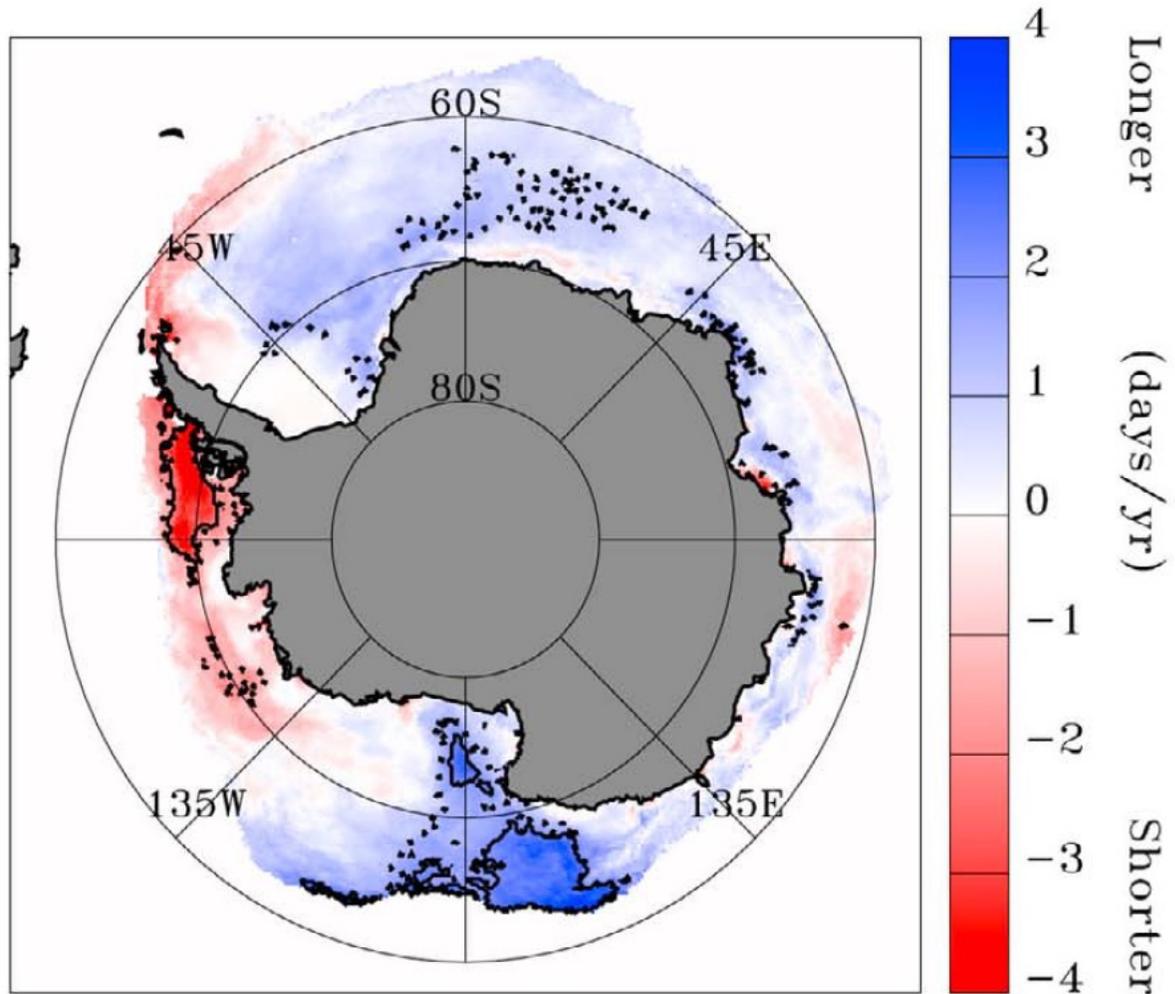
1. www.zestuous.com
2. G. Watters
3. www.glofosoltd.com
4. theconversation.com
5. M. Goebel
6. J. Weller
7. www.ebi.ac.uk/pdbe

Key elements of CCAMLR MPA process

- Collate data and map habitats, “ecosystem process areas,” bioregions, fishing grounds, tourism traffic, etc.
- Define domestic policy aims, determine “conservation targets,” and identify priority locations through stakeholder consultation
- Draw alternative boundaries and consider management approaches (e.g., no-take vs. seasonal closure) that can achieve policy aims
- Define and agree collective, “specific objectives” and management approaches through international negotiation



Trends in sea-ice duration



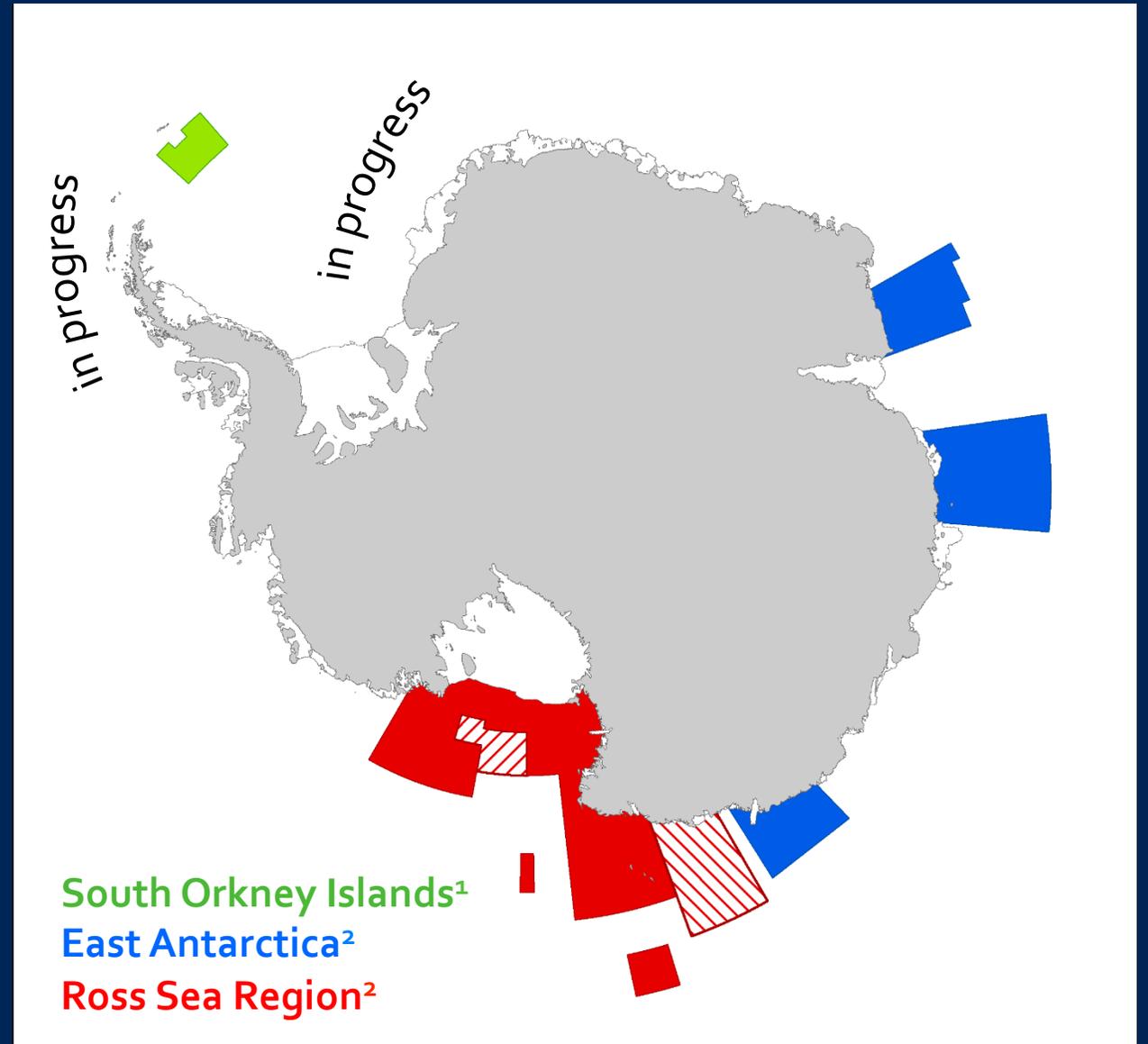
Stammerjohn et al. (2012)

Photos: J. Weller

MPAs = spatial plans to

- mitigate threats
- promote resiliency
- improve understanding
- provide services

MPAs must include a
Research and Monitoring
Plan (R&MP)



¹MPA currently in force ² proposed MPA

Tale of two planning domains

ROSS SEA REGION

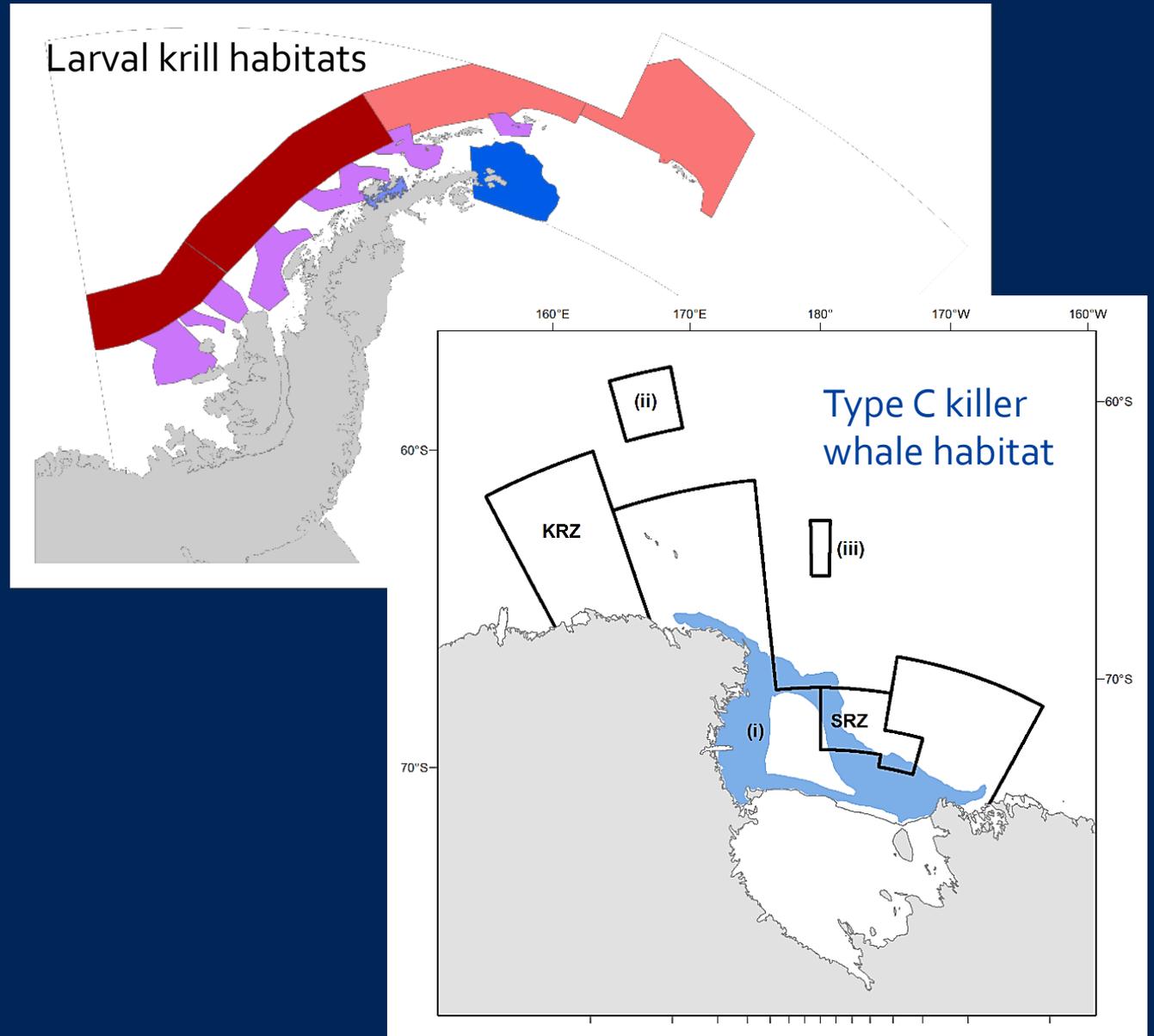
- No AERD data – leverage data from academic community
- Toothfish fishery
- U.S. stakeholders seem more focused
- USA at tip of spear (with NZ)
- Mature proposal in active negotiation
- Draft R&MPs exist

ANTARCTIC PENINSULA REGION

- Lots of AERD data plus data from academic community
- Krill fishery
- U.S. stakeholders seem more varied
- USA is shaft of spear
- Draft proposal does not exist
- Draft R&MP does not exist

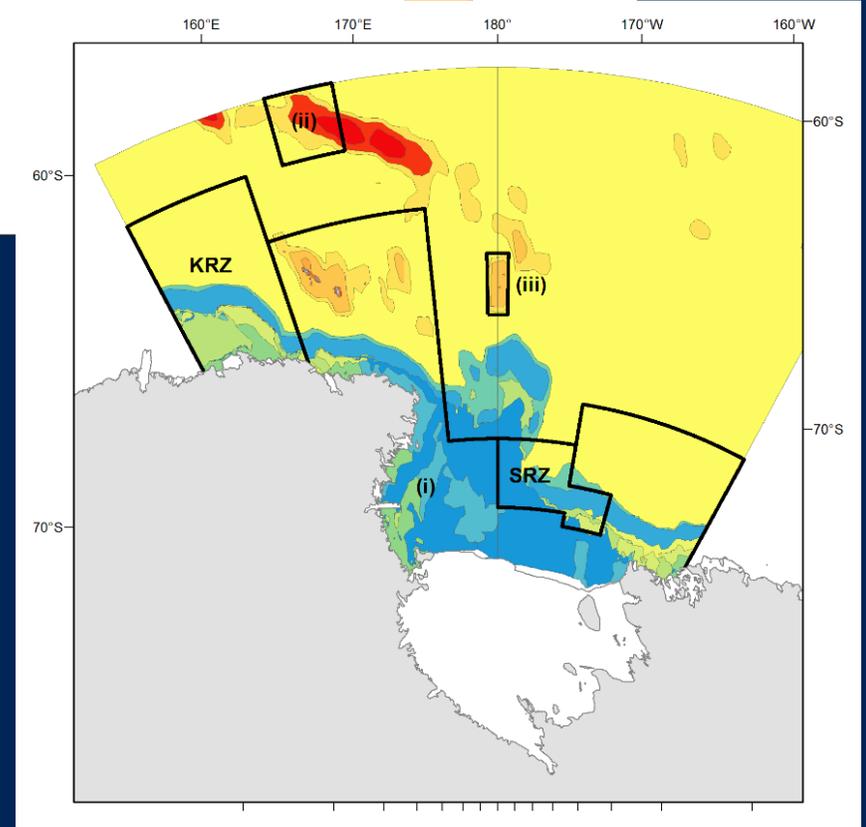
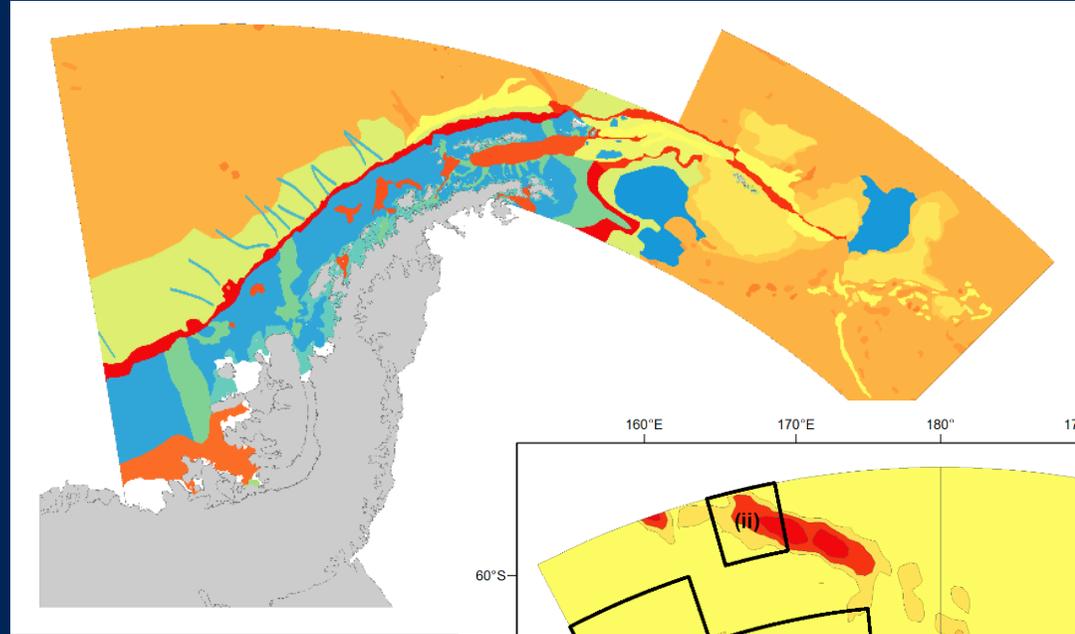
Mitigate threats

- Protect
 - nursery areas
 - foraging areas
 - vulnerable benthic communities
 - unique habitats
- Etc.



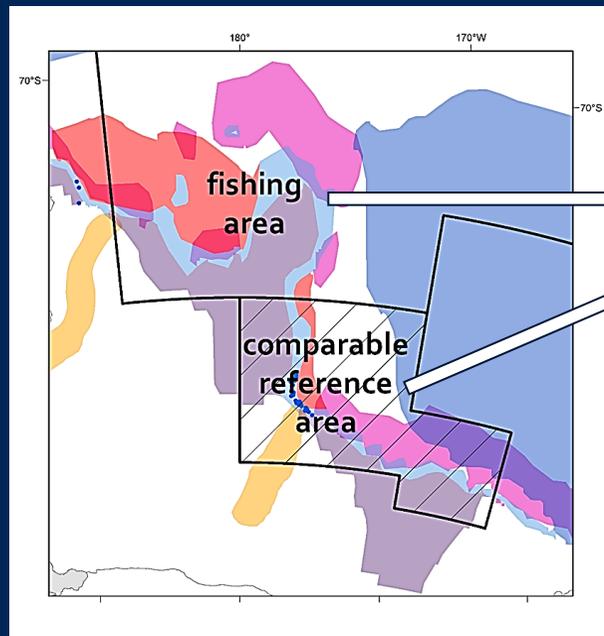
Promote resiliency

- Protect “representative” proportions of
 - benthic and pelagic bioregions
 - productive habitats (e.g., polynyas)
 - structuring habitats (e.g., sea-ice habitats)
- Etc.

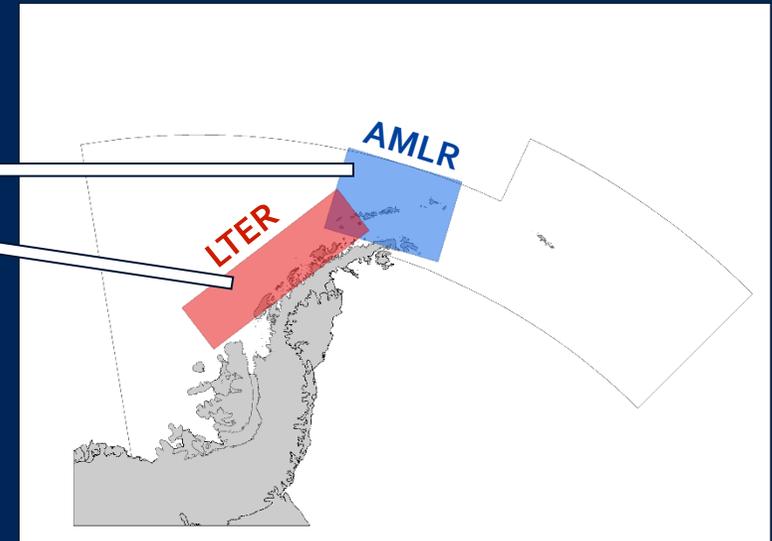


Improve understanding

- Compare ecosystem structure and function between fished and un- or less-fished areas



Effects of fishing and climate
- Effects of climate (mostly)
= Effects of fishing separate from climate (mostly)



Stakeholder consultation – Ross Sea Region

U.S. STAKEHOLDERS*

- Protect air-breathing predators
- Protect benthic communities
- Maximize biodiversity
- Maximize rebuilding potential for blue whales
- Protect “depauperate basin assemblages”

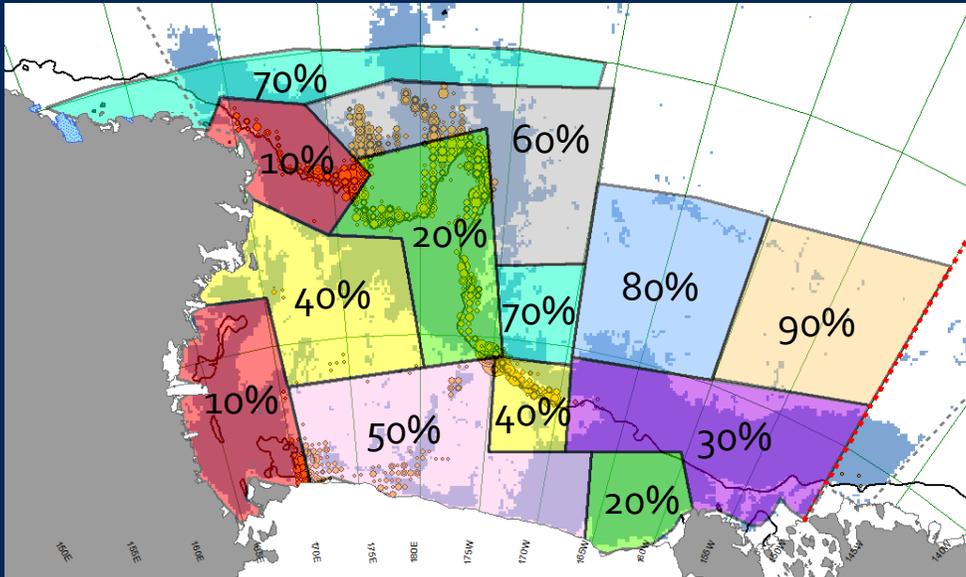
* many stakeholders wish to establish no-take MPA over entire continental shelf and slope

USA

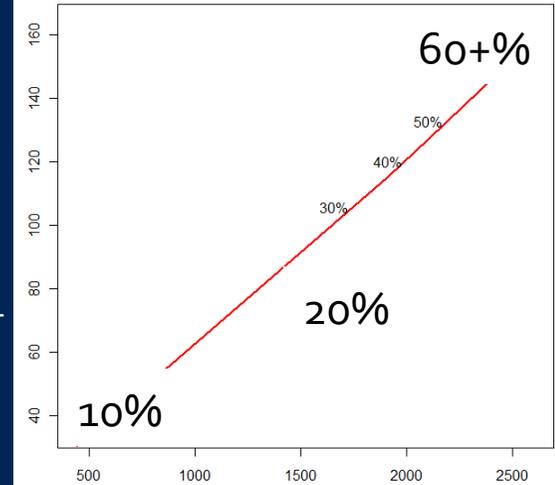
- conserve ecological structure and function ... by prohibiting fishing in habitats that are important to native mammals, birds, fishes, and invertebrates
- maintain a reference area in which there is no fishing to better gauge the ecosystem effects of climate change
- promote research and other scientific activities (e.g., monitoring) focused on marine living resources

Ross Sea Region Contd.

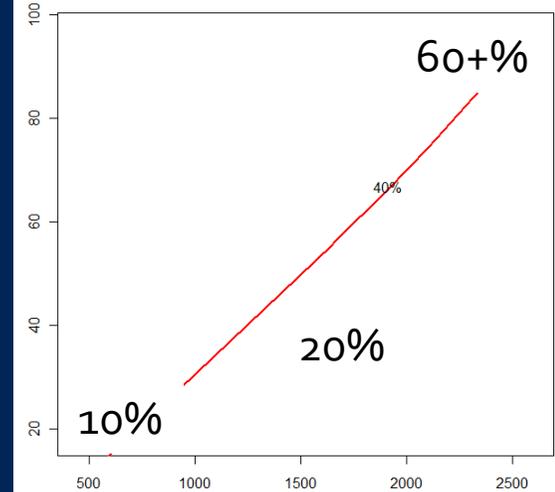
- Keeping your objectives in mind, what MPA boundaries would you draw if you could only protect 10% of the area? What if you could protect another 10% and so on?



cumulative protection of predator habitat



cumulative protection of benthic habitat



cumulative displacement of fishing effort

Stakeholder consultation – Ant. Peninsula

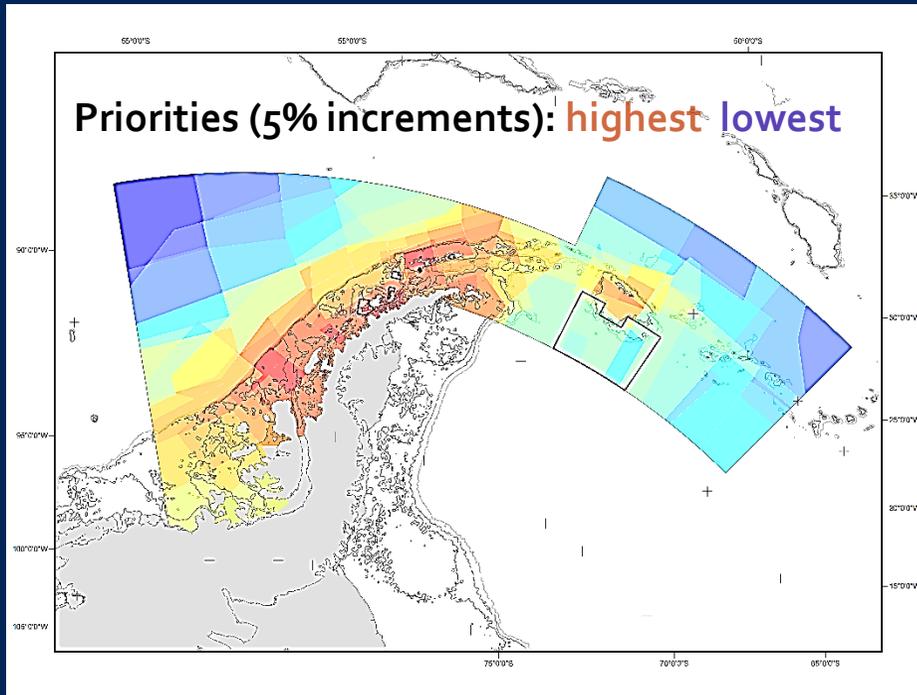
U.S. STAKEHOLDERS

- Protect krill spawning and larval development
- Study climate impacts separate from fishing
- Preserve the integrity of existing studies
- Foster resilience and provide refugia to threats from climate change

USA

- TBD (but draft text exists)

Antarctic Peninsula Contd.



Area of planning domain of "priority interest" to U.S. stakeholders

	10%	50%
% of priority locations already protected	6	12
% of krill caught 2006-2014*	42	100
% of krill fishing effort 2006-2014*	43	100
% area of fishery-predator overlap	74	100

* lots of room for potential compromise

Tale of two planning pathologies

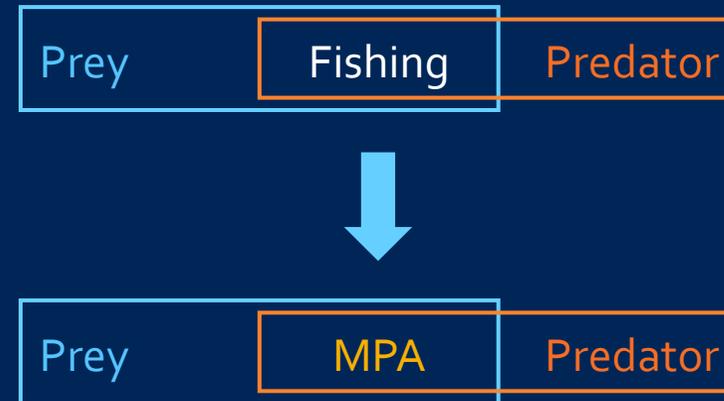
ALGORITHMIC

- Protect 50% of prey and predator habitats while minimizing cost



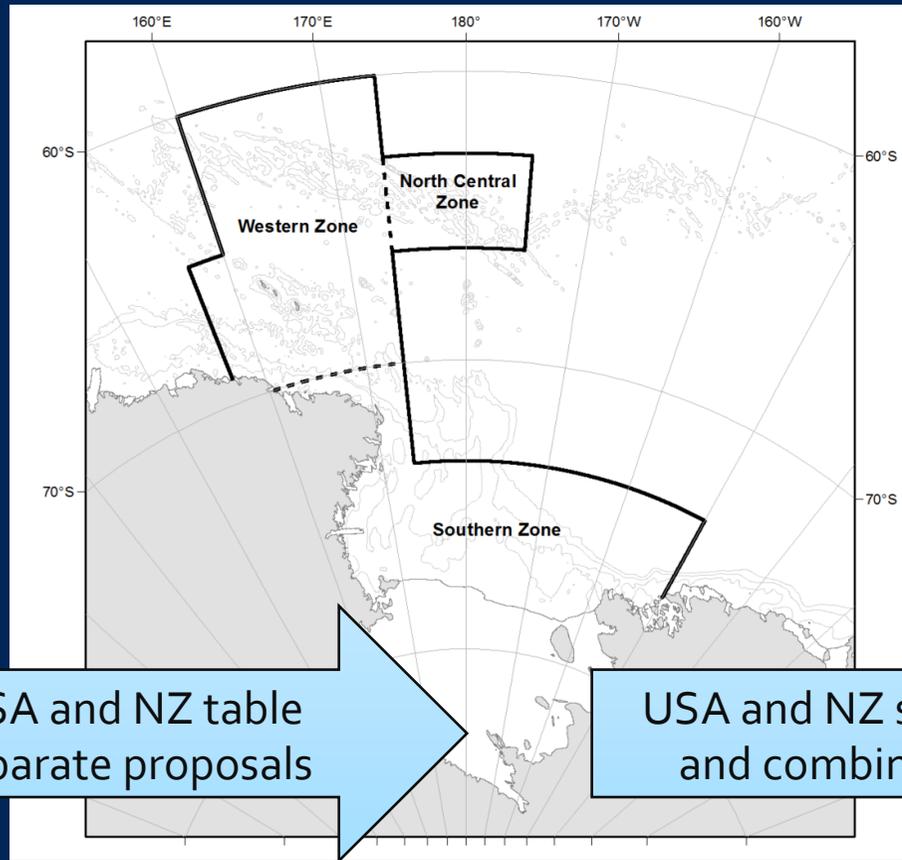
COMMON SENSE

- Protect locations where all the ecological action occurs



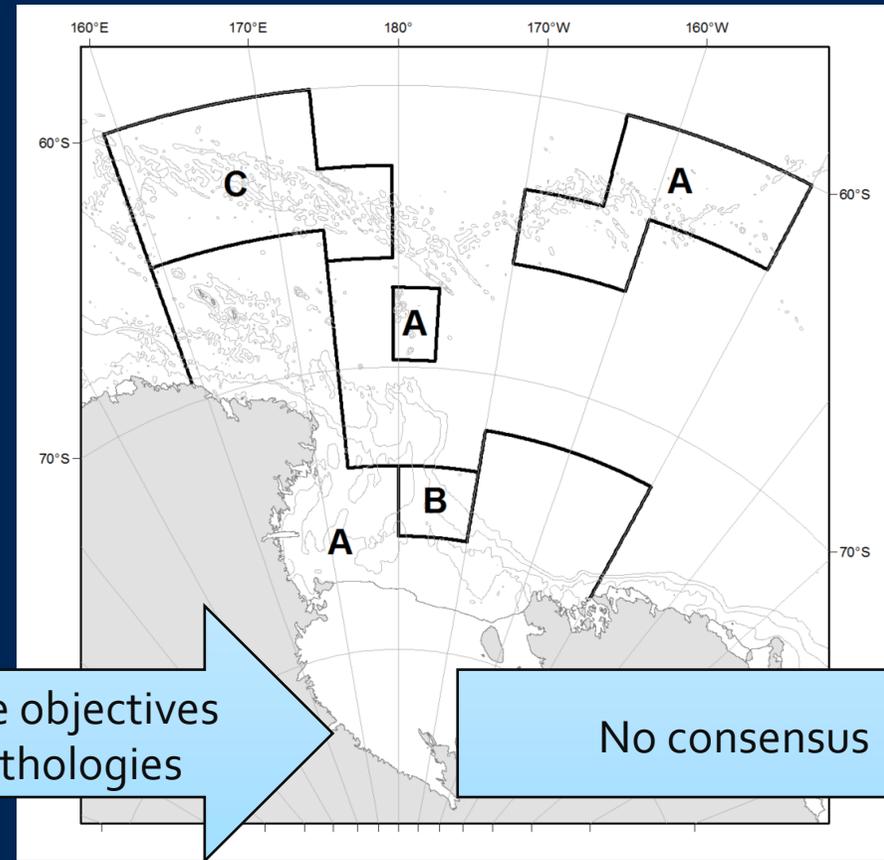
Evolution 2012

1.5 yrs (challenging) bilateral negotiations with NZ



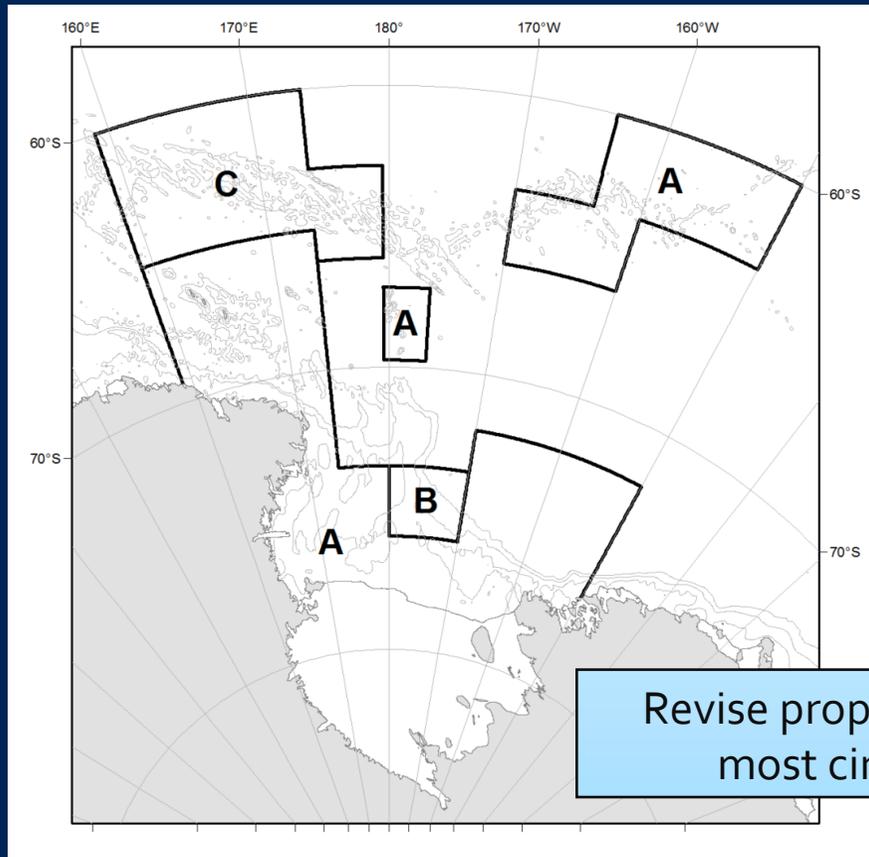
USA and NZ table separate proposals

USA and NZ share objectives and combine pathologies

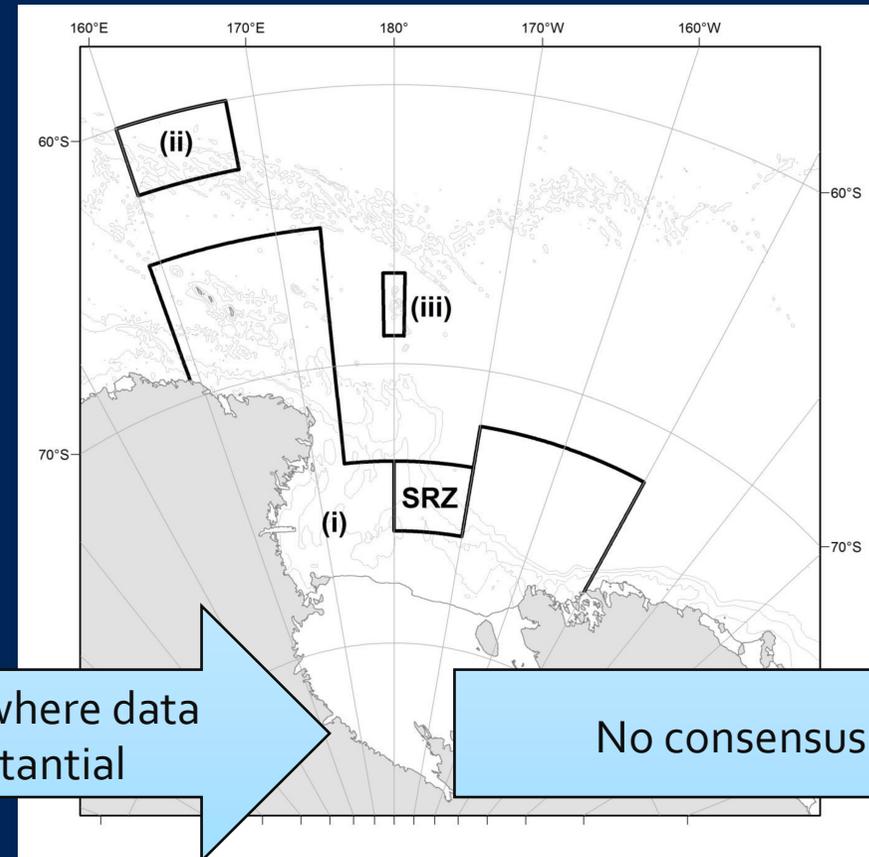


No consensus

Evolution 2013

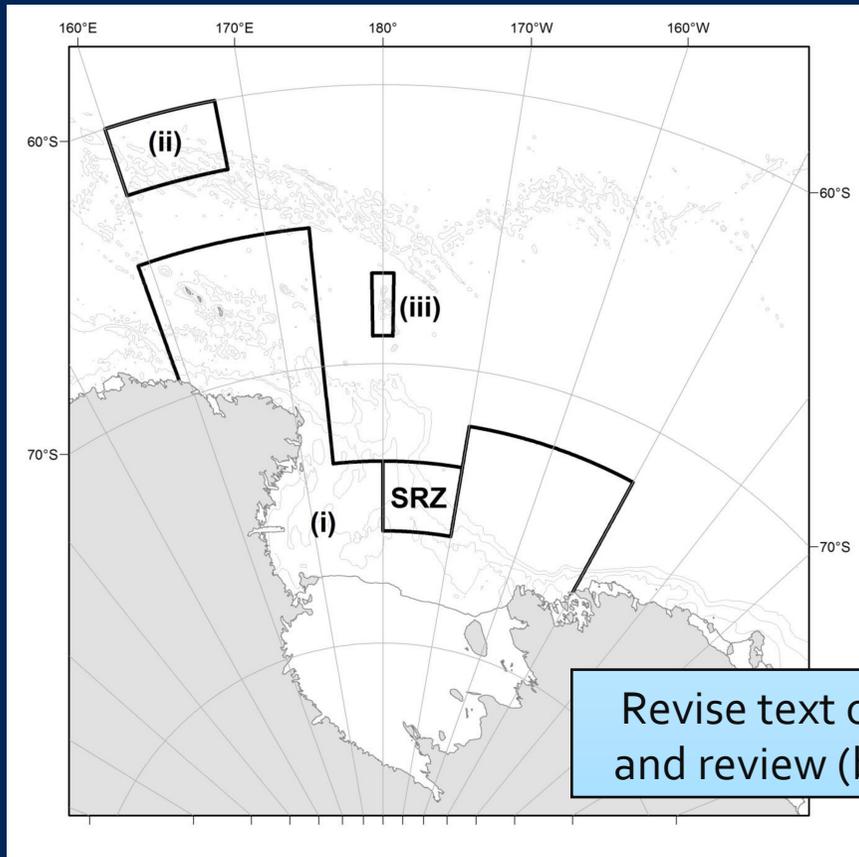


Revise proposal where data most circumstantial

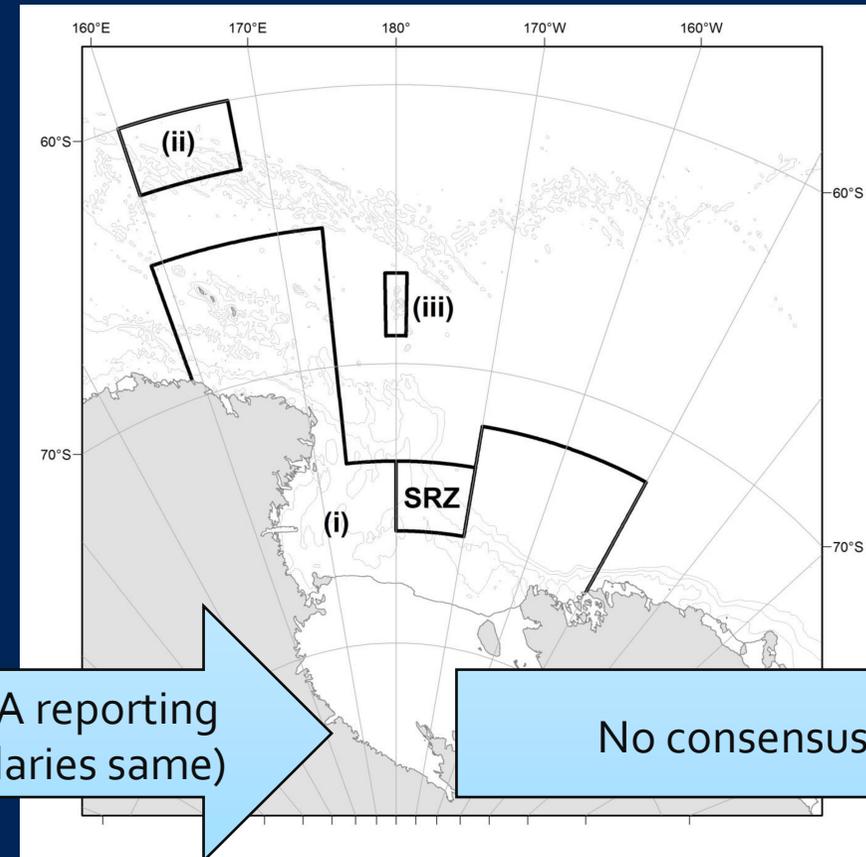


No consensus

Evolution 2014

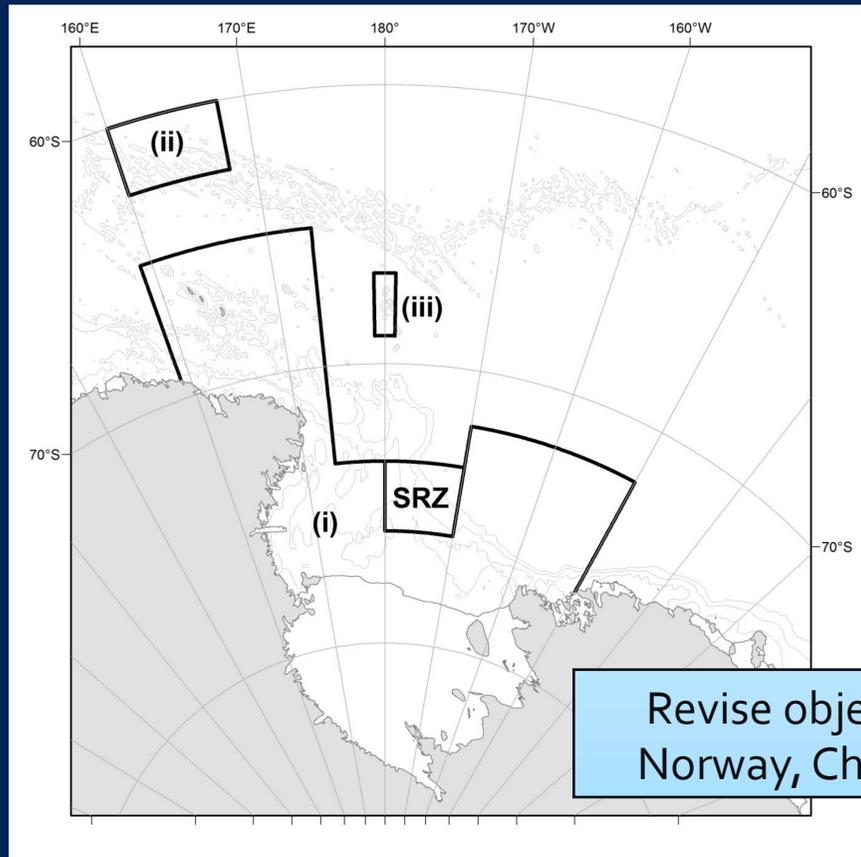


Revise text on MPA reporting and review (boundaries same)

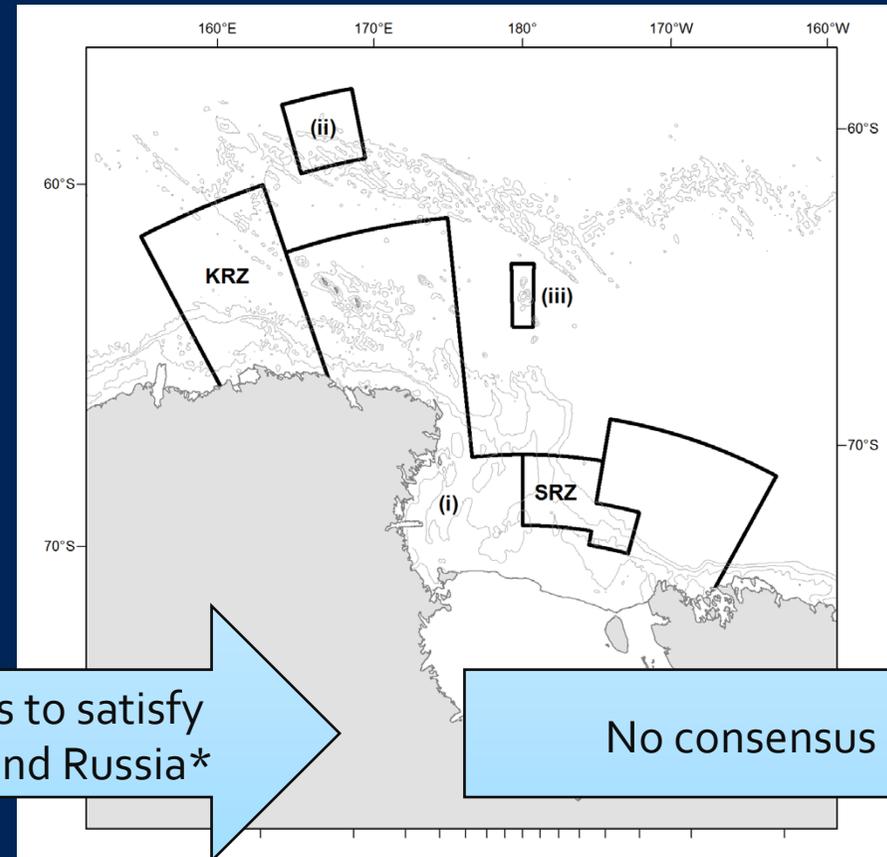


No consensus

Evolution 2015



Revise objectives to satisfy Norway, China, and Russia*



No consensus

NMFS EBFM Policy and CCAMLR MPAs

NMFS Principles*	MPAs
1. Implement ecosystem-level planning	MPAs are strategic plans for spatial management at the ecosystem level
2. Advance understanding of ecosystem processes	MPAs aim to improve understanding and will require ongoing monitoring to be informative about change
3. Prioritize vulnerabilities and risks	MPAs aim to mitigate threats
4. Explore and address tradeoffs	MPA boundaries reflect views of multiple stakeholders
5. Incorporate ecosystem considerations into management advice	MPA boundaries are based on intersection of ecosystem data and objectives
6. Maintain resilient ecosystems	MPAs aim to promote resiliency

* from draft NMFS Policy Directive on Ecosystem Based Fisheries Management (J. Link)

Answers to TOR questions

5. Ecosystem-level processes are generally boiled down into habitat maps
6. “Ecosystem thinking” is fully integrated into MPA development – both as fundamental data (e.g., habitat maps) and in determining boundaries (e.g., trading off threat mitigation and provision of services)

STRENGTHS

- USA is committed at highest levels
- U.S. data
- U.S. negotiating team
- Healthy, challenging dialogue with stakeholders

CHALLENGES

- Overcoming burden of proof
- Achieving consensus on how to address tradeoffs
- Geopolitics
- Finite duration
- Requirements for future monitoring

STRATEGIES

- Keep picking away
- Fly all over the world and engage with people
- Fly all over the world a few more times
- Design something awesome from the beginning
- Engage with NSF, PRB, SCAR, etc.